



Fermilab
ES&H Section

INDUSTRIAL HYGIENE EQUIPMENT PROCEDURES

QUEST 215 SOUND LEVEL METER

OBJECTIVE

To assure accurate and precise data in the evaluation of employee exposure to noise.

DISCUSSION

The Quest 215 SLM meets ANSI Standard S1.4-1971 for Type 2 instrumentation. The unit has a dynamic range from 30 to 140 dB. It can be used on the A, B, or C weighted scale or a linear (flat) scale may be used. It can also be used in the "slow" or "fast" response mode. Accuracy is +/-1dBA.

Used with the Model OB-45 Octave Band Filter, the SLM serves as an octave band analyzer. It can also be used with the PH-35 Peak Hold Module to record peak readings. This is useful in determining OSHA impulse noise PEL [29CFR1910.95 (b) (1)]

There are two possible interferences to accurate readings. The first is air turbulence which can cause a positive error. This is controlled with the use of a wind screen. The second is magnetic fields. Fields from magnets, generators, transformers, arc welding, radio transmitting can induce a current in the electronic circuitry of the sound level meter and cause erratic readings. Consult the ES&H Section for further information.

EQUIPMENT

- Quest 215 Sound Level Meter (SLM)
- OB-45 Octave Band Analyzer
- PH-35 Peak Hold Module
- Wind Screen
- IH Sampling Notes Form or Noise Sampling Notes Form

PROCEDURES

1. Calibrate the SLM per calibration procedure 2.7. Record the calibration on the sampling notes form.
2. Use a microphone windscreen if the wearer will be outside or in dusty areas.
3. For most employee exposure evaluations, the meter should be set on SLOW response and the A weighted scale.
4. Turn on the instrument. Use the range selector to select the proper range.
5. When taking readings, hold the instrument away from you at an angle of approximately 70 degrees from horizontal. Do not point the microphone directly at the noise source.
6. Record findings on sampling notes form.
7. When finished, post calibrate the device.

PROCEDURES FOR THE OCTAVE BAND ANALYZER

1. Check the operation of the octave band analyzer (see calibration instructions)
2. Set the dB RANGE selector and FAST-SLOW switch to the appropriate settings for the noise being measured.
3. Set the WEIGHTING switch on the sound level meter to EXT. This switch position, and only this position, electrically engages the OB-45 filter.
4. Turn the SLM on. Adjust the dB RANGE selector to the best scale reading and record.
5. Repeat step 5 for each FREQUENCY selector setting.
6. If you wish to know the overall noise unweighted, set the weighting switch to LIN (linear).

PROCEDURES FOR THE PEAK HOLD MODULE

1. Connect the PH-35 to the sound level meter.
2. Set the dB RANGE selector and WEIGHTING switch on the sound level meter for the measurement being made. Usually the A scale is used for FAST peak-hold, while the LIN response is used for OSHA IMPACT. The peak-hold will not function on the EXT position.

3. If the PH-35 meter needle is not at or near the left hand rest position, press the reset button.
4. When taking readings and the needle goes off scale, press the 10+ button on the side of the instrument and take the reading again adding 10 dB to the indicated reading.

